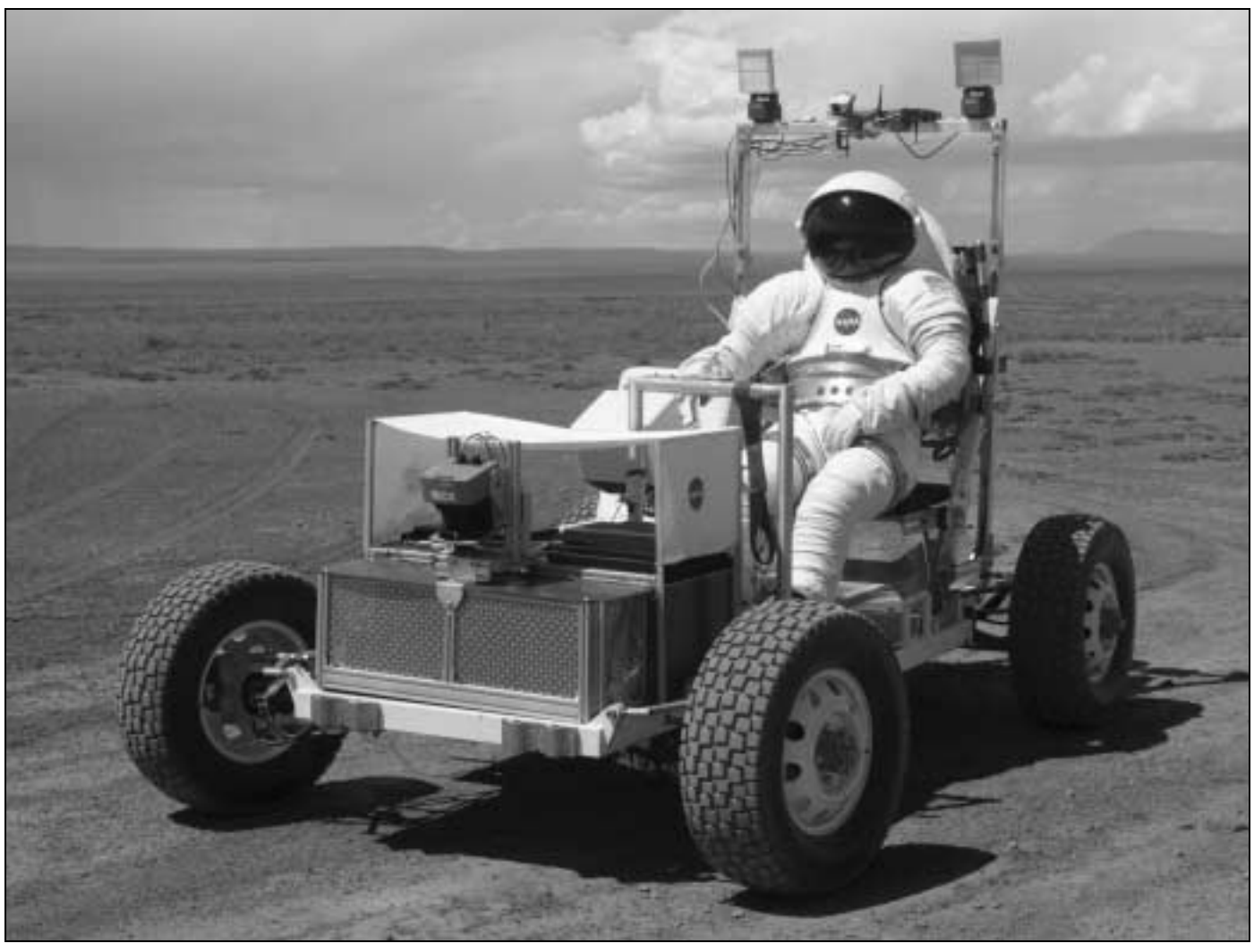
SPACE CENTER
Roundup
LYNDON B. JOHNSON SPACE CENTER

December 2003
Houston, Texas
Volume 42
Number 12



jsc2003e57466 and jsc2003e57386 Photos by Mark Sowa

Rock and Roll

Johnson Space Center's Dean Eppler of the Desert RATS 2003 makes his way across the Arizona desert during recent field tests involving two advanced spacesuits; the Science Crew and Utility Testbed; a robot named Boudreaux and the 1-G Apollo Lunar Rover Trainer.

For more information on the Desert RATS 2003, see pages 6-7.

In This Issue

From the desk of Lt. Gen. Jefferson D. Howell Jr.

Director's Message

Holiday Reflections

During the holiday season, I find myself spending a lot of time thinking about the past. This is particularly true now that I've gotten to be an old guy.

As I think about the Thanksgivings and Christmases of my childhood, I almost start salivating because it reminds me of the great meals we would enjoy. My schoolteacher parents were of modest means, so most of the packages under the Christmas tree consisted of school clothes and other essentials for my sisters and me. We learned not to anticipate receiving many toys or frivolous gifts. However, there was always plenty of wonderful food!

My Aunt Annie Towns would normally join us for the holidays. She and Mother would spend hours in the kitchen preparing the holiday feasts. Our little house on Colorado Street in Victoria, Texas, would be filled with the scents of turkey and dressing, steaming pies (pecan for me, chocolate for my sister Joy) and other various and sundry goodies. Cousins and family friends would arrive in the afternoon and we would eat our fill while enjoying each other's company. I had no idea how poor we were because I was totally immersed in the warmth and love of my parents, family and friends. Life was good!

In that early period of my life, I didn't realize how fortunate I was to be surrounded by a loving family and loyal friends. As time has progressed, I have grown to appreciate that nothing, I mean NOTHING, is more important in one's life than family and friends. I have reaffirmed this truth through personal experience time and time again.

WHICH BRINGS ME TO MY POINT: I cannot properly express how thankful I am to be a part of NASA, the Johnson Space Center team and to be associated with all of you as we pursue our noble endeavor. That I can call you my friends and colleagues is an immense honor to me. Many of you tend to forget how very special you are. There are a select few places in this world where men and women have joined together to attempt achieving what has become routine to us. That we are at the focal point of human space exploration is even more special. Each of us, executing our tasks as best we know how, is an integral and important part of this incredible team! You, my friends, make me very proud and give me great happiness. Thanks, and…

HAPPY HOLIDAYS!

Beak sends…

APPEARING THIS MONTH IN OUR

Guest Space

NASA's influence bridges the age of flight and the space age

Kevin L. Petersen
Director, NASA Dryden Flight Research Center

A moment of introspection during this Centennial of Flight year shows how intertwined NASA is with the progress of flight, both in the air and in space. When NASA's forerunner, the National Advisory Committee for Aeronautics (NACA), was created by act of Congress in 1915, 12 years had elapsed since the Wrights' first flight, and the jury was still out on the utility of aviation. Yet only eight years after Alan Shepard made America's first suborbital hop in a Mercury capsule in May of 1961, human footprints compressed the surface of the Moon.

It's no accident that our Agency is called the National Aeronautics AND Space Administration. This isn't an either/or affair; since 1915, we've been expanding the boundaries of flight from the surface of the Earth into space. Early NACA forays codified flight phenomena and led to standards for aircraft design that helped enable one aeronautical revolution after another, including the transition into supersonic flight in 1947. This led us to hypersonic flight with the X-15 and exoatmospheric missions that earned astronaut wings for a number of X-15 pilots.

NACA engineers pioneered the airfoils and control-surface advancements that enabled supersonic flight in the late 1940s; a later visitation to this discipline by NASA engineers and research pilots gave the world the efficient supercritical wings and fly-by-wire technology that has enabled significant fuel economies, and the creation of vehicles like the vaunted B-2 and the Space Shuttle that would not be possible with manual controls. At NASA's Dryden Flight Research Center, our forebears tested the aerodynamics of steep descents using lifting body vehicles that enabled controlled landings to be made with spacecraft like the Space Shuttle.

It's a little like tracing DNA – open any book about any era of aerospace flight since 1915, and you can find the imprint of NASA inextricably woven into the matrix. During four long years of global combat in World War II, NACA minds at Langley, Lewis (now Glenn) and Ames addressed near-term aerodynamic and propulsion problems that helped make American aircraft war-winners. It was during the war that testers from Ames took advantage of the huge dry lakebed that now serves Dryden and Edwards Air Force Base. In the immediate postwar era, NACA established its High Speed Flight Station on the lakebed, evolving to become the Dryden Flight Research Center.

At Dryden, we practice a discipline that is part aeronautics and part astronautics as we help programs born at Johnson, Langley, Kennedy, Marshall and elsewhere validate the atmospheric portions of flight for vehicles destined to enter and return from space. And a uniquely appropriate flight program in this centennial year of aviation is our Active Aeroelastic Wing F/A-18 supersonic jet aircraft – a modern airplane modified to twist its wings for roll inputs, which is a method used by the Wright brothers a hundred years ago. The new version uses modern materials and computerized flight controls in a quest for improved maneuverability and flight efficiency, but its historic link to the Wright brothers provides us all a perspective on the genius of those two bicycle makers who gave the world flight.

NASA shares more than a circumstantial link with the Wrights – Orville Wright served on the National Advisory Committee for Aeronautics from 1920 to 1948, helping to give substance as well as inspiration to NACA for nearly three decades.

When the Space Shuttle returns to flight, all of NASA will stand proud. And in this Centennial of Flight year, all of NASA should also stand proud, acknowledging a heritage that reaches clear back to Orville and Wilbur Wright on the windy dunes of Kitty Hawk.

Return to Flight: Improved imagery systems to provide extra ‘eyes’ on orbiter

By Kendra Ceule

On future Shuttle flights, there may be nearly double the number of ground cameras focused on the vehicle during launch as there have been in the past – as well as new cameras onboard.

In a briefing held at Johnson Space Center on Sept. 16, experts informed the media of the proposed changes to the imagery system. The use of additional cameras, including three on the Shuttle itself, is intended to help experts on the ground quickly identify any potential problems – such as the piece of foam that struck *Columbia* when it launched and was later blamed for the heat-shield breach that destroyed the spacecraft during reentry. The sooner a possible problem is spotted, the sooner it can be addressed.

The view from one of the proposed Shuttle-based cameras might look familiar to viewers who watched the launch of STS-112 in October 2002.

“The External Tank camera will be the same as it was for STS-112, but will be moved to a new location,” said Christine Boykin, Aerospace Engineer in the Space Shuttle Program Systems Engineering and Integration Office. “The new view will include the bipod and the underside of the orbiter and its wings.”

Boykin said that “the current plan is to add cameras to the External Tank and to each Solid Rocket Booster,” providing up-close views of the vehicle during launch and entry into the atmosphere. These views would be supplemented by ground-based cameras: the pre-existing 12 and a proposed nine more.

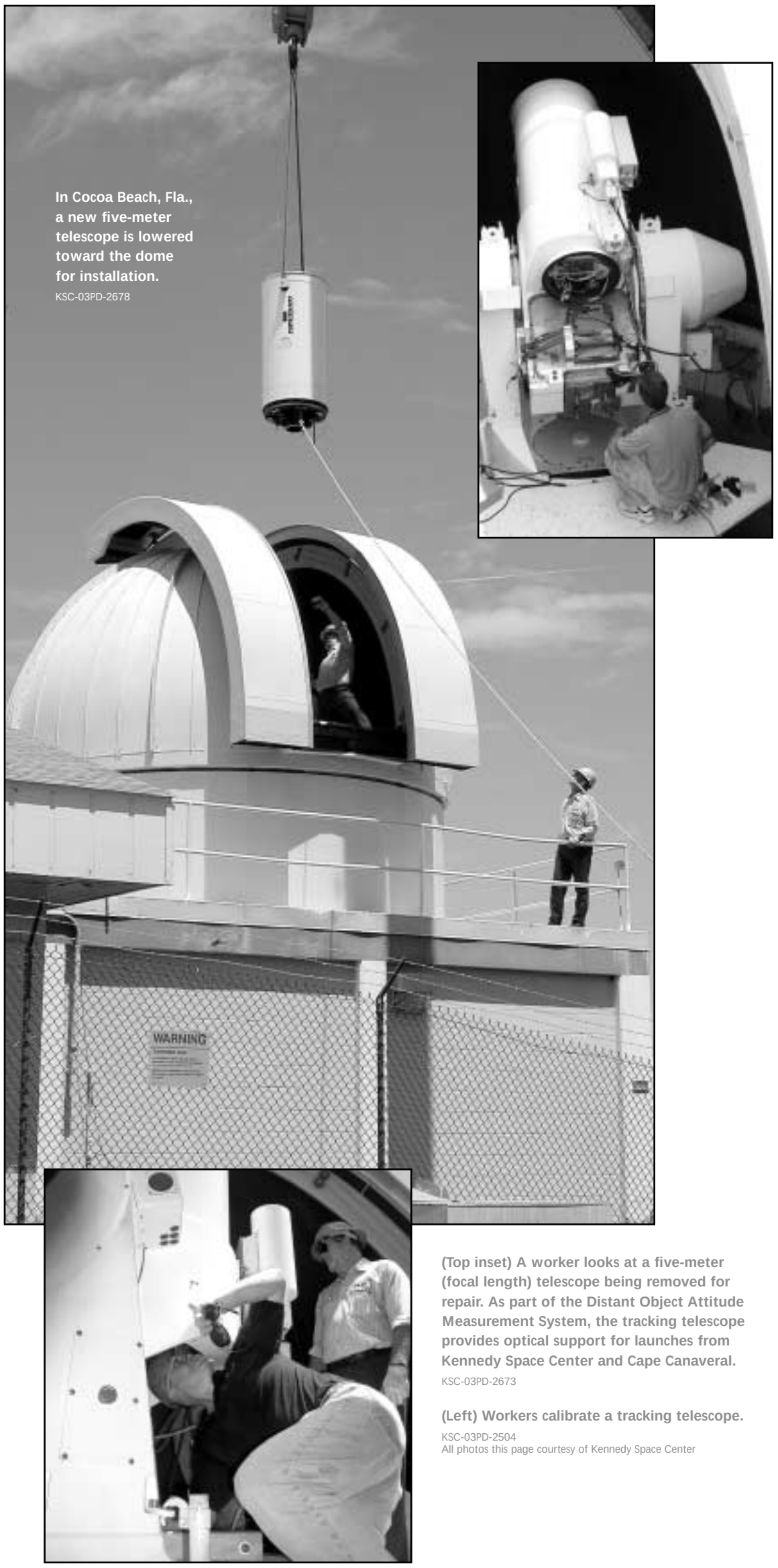
The new cameras would include five new long-range trackers, for a total of 10; two new medium-range trackers, for a total of seven; and one new short-range tracker, for a total of three. The combination of different views and ranges ensures that the vehicle can be seen from as many angles as possible for as long as possible.

Each set of cameras has its strengths: For example, long-range cameras track the Shuttle longer than a short-range camera can, but the image is less precise as the distance increases. The short-range trackers provide the best detail of any of the ground-based cameras, but are so close to the vehicle – about 1,300 feet away – that it takes two of them to capture an image of the entire Shuttle.

Night launches are another concern for imaging teams. The dark launches are “very difficult because you have to look through the Shuttle’s (exhaust) plume to see the vehicle,” said Bob Page, Intercenter Photography Working Group Chairman.

While adhering to a daylight-only launch schedule will dramatically reduce the number of launch windows, it will enable better and more detailed imagery of each launch – allowing potential problems to be seen and solved that much sooner.

Also participating in the briefing were John Muratore, Manager of Space Shuttle Systems Engineering and Integration, and Dena Hayes, Camera Project Manager for JSC’s Avionic Systems Division.



In Cocoa Beach, Fla., a new five-meter telescope is lowered toward the dome for installation.
KSC-03PD-2678

(Top inset) A worker looks at a five-meter (focal length) telescope being removed for repair. As part of the Distant Object Attitude Measurement System, the tracking telescope provides optical support for launches from Kennedy Space Center and Cape Canaveral.
KSC-03PD-2673

(Left) Workers calibrate a tracking telescope.
KSC-03PD-2504
All photos this page courtesy of Kennedy Space Center